WHAT IS CLAIMED IS:

1.      A computer-implemented method for estimating a background color of a scanned image, comprising:

5          generating a frequency distribution of pixel colors for each axis scan line in a first direction and for each axis scan line in a second direction of the scanned image;

compiling of list candidate colors based on the frequency distributions;

10          determining a most common candidate color from the list of candidate colors; and

designating the most common candidate color as the estimated background color.

15      2.      The computer-implemented method of claim 1, wherein each frequency distribution is a histogram.

3.      The computer-implemented method of claim 1, wherein each axis scan line in the first direction and each axis scan line in the second direction is at 20    least one of: (a) a row of pixels in the scanned image; (b) a column of pixels in the scanned image.

4.      The computer-implemented method of claim 1, wherein each axis scan line in the first direction and each axis scan line in the second direction are 25    not orthogonal to each other.

5.      The computer-implemented method of claim 1, further comprising determining a most common pixel color for each of the frequency distributions.

30      6.      The computer-implemented method of claim 5, further comprising designating the most common pixel color of each frequency distribution as a

candidate color if a frequency value of the most common pixel color is approximately greater than a frequency threshold.

7.    The computer-implemented method of claim 6, wherein the frequency threshold is approximately .9 or 90%.

8.    The computer-implemented method of claim 1, further comprising determining a variance of the estimated background color.

9.    The computer-implemented method of claim 1, wherein generating a frequency distribution of pixel colors further comprises computing a histogram of pixel colors for each row and column in the scanned image.

10.    The computer-implemented method of claim 9, further comprising obtaining a variance of the estimated background color from its histogram and using the variance in another image processing technique used on the scanned image.

11.    The computer-implemented method of claim 1, further comprising dividing the scanned image into separate color components and estimating a background color for each of the color components.

12.    A computer-readable medium having computer-executable instructions for performing the computer-implemented method recited in claim 1.

13.    A computer-readable medium having computer-executable instructions for processing a scanned image containing objects to obtain a background color of the scanned image, comprising:

    computing a histogram of pixel colors for each row and each column of the scanned image;

determining a most common pixel color in each histogram by examining pixel frequency values;

designating a pixel color of the histogram a candidate background color when a pixel frequency value of the pixel color is greater than a frequency

5      threshold;

adding the candidate background color to a list of candidate background colors;

computing a most common candidate background color in the candidate background color list;  and

10      designating the most common candidate background color as an estimated background color.


14.      The computer-readable medium of claim 13, wherein the frequency threshold is at least approximately 90% of all pixels in the histogram.

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15.      The computer-readable medium of claim 13, further comprising estimating a variance of the estimated background color by examining the associated histogram.


20      16.      The computer-readable medium of claim 15, further comprising using the variance of the estimated background color to determine a threshold for use in detecting and segregating the objects within the scanned image.


17.      The computer-readable medium of claim 13, wherein the scanned

25      image is a color image and further comprising separating the scanned image into red, blue and green image planes and estimating a background color for each of the image planes.


18.      A background color estimation system for estimating a background

30      color of a scanned image, comprising:

a candidate color extractor that extracts candidate background colors from the scanned image by computing a frequency distribution of pixel colors for a first axis scan line and a second axis scan line of the scanned image;

a candidate color list that is populated with candidate background
5   colors extracted by the candidate color extractor;  and

a candidate color frequency module that examines the candidate color list and designates the most common candidate color in the list as the estimated background color.

10   19.   The background color estimation system as set forth in claim 18, wherein the candidate color extractor further comprises a color component separator that separates the scanned image into color components or planes.

20.   The background color estimation system as set forth in claim 18,
15   wherein the candidate color extractor further comprises a coordinate system selector that selects a coordinate system to be used on the scanned image.

21.   The background color estimation system as set forth in claim 20, further comprising a coordinate scanning module that  scans the scanned image
20   along the first and second axis scan lines of the coordinate system such that each pixel in the scanned image is examined.

22.   The background color estimation system as set forth in claim 18, wherein the frequency distribution is a histogram.
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23.   The background color estimation system as set forth in claim 18, further comprising a frequency distribution analyzer that analyzes the frequency distribution generated by the frequency distribution generator to extract certain properties.
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24.     The background color estimation system as set forth in claim 23, wherein the properties include at least one of:  (a) a color of each pixel along a row or column of the scanned image;  (b) a frequency value for each pixel color; (c) a variance of each pixel color.

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